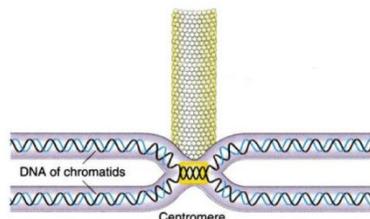


Cell Cycle and Mitosis Questions

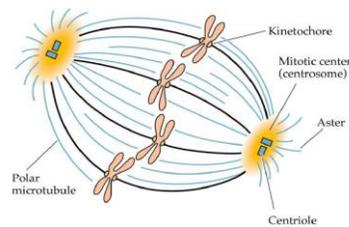
The following questions closely follow the order of the notes.

1. The stages in the growth and reproduction of a cell are called the _____.
_____ **Cell cycle**
2. The larger a cell becomes, the _____ less efficiently it is able to function. **Cell membrane becomes**
3. List the 5 stages in the cell cycle. **G1, S, G2, M, C**

4. What does G1 stage stand for? **Primary Growth**
5. Name two things that happen to a cell during G1?
 - a. **Makes more organelles, grows (more cytoplasm)**
 - b. **Normal metabolic activities**
6. What is the S stage of the cell cycle? **Synthesis of DNA**
7. _____ instructions are copied in the S phase as _____ are duplicated. **Genetic, DNA**
8. _____ stands for second growth stage. **G2**
9. G2 is the time between _____ and _____. **S, M**
10. A cell that has 5 chromosomes in the G1 phase will have _____ chromatids in the G2 phase. **10**
11. Together, the G1 phase, S phase, and G2 phase are called _____. **Interphase**
12. Mitosis or cell division is known as the _____ stage. **M**
13. Mitosis is also called _____ which means division of the _____. **Karyokinesis, nucleus**
14. Name the 4 stages of mitosis. **Prophase, Metaphase, Anaphase, Telophase**
15. Name 2 things that happen to a cell during prophase.
 - a. **Nucleolus and nuclear membrane disappear**
 - b. **Chromatin condenses into chromosomes**
16. Can chromosomes be seen during prophase? **No**
17. Sketch a eukaryotic chromosome and label the centromere and kinetochore fiber that attaches to it.

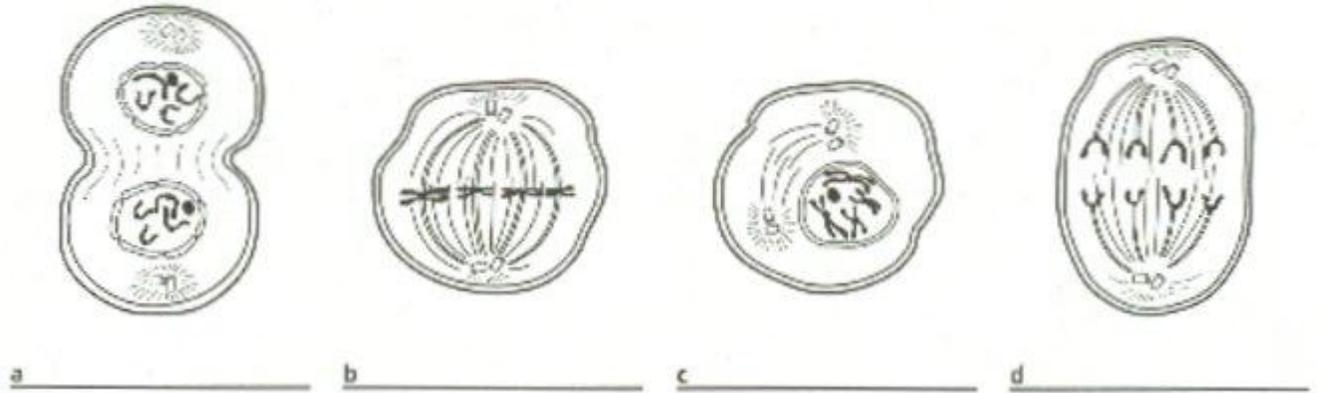


18. List 3 things that occur during metaphase.
 - a. Kinetichore fibers connect to chromosomes
 - b. Move chromosomes toward center of cell
 - c. Align chromosomes at the metaphase plate at the equator
19. Where are chromosomes located during metaphase of a cell? Metaphase plate
20. What stage occurs after metaphase? C-cytokinesis
21. List 2 things that happen to cells during anaphase.
 - a. Sister chromatids split at the centromere
 - b. Kinetichore fibers shorten
22. Sketch and label the mitotic spindle and attached chromosomes.



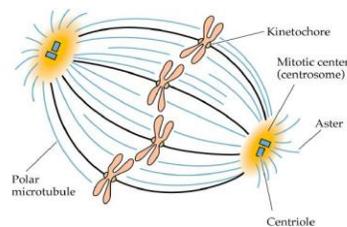
23. What is the last stage of mitosis? Telophase
24. Where are the two sets of chromosomes located at Telophase? At opposite poles
25. What two things reform during Telophase? Nucleolus, Nuclear membrane
26. Chromosomes _____ during Telophase so they are no longer visible. Decondense
27. What happens after telophase? Cytokinesis
28. In plants, what begins to form that will separate the two cells? Cell plate
29. How are the two cells separated from each other in animals? Cleavage furrow
30. _____ or division of the cytoplasm follows _____, division of the nucleus, and forms _____ daughter cells. Cytokinesis, mitosis, two
31. How do the two, new daughter cells compare to each other? They are identical

32. Label the following stages of mitosis. **Telophase, Metaphase, Prophase, anaphase**
STRUCTURES AND FUNCTIONS In the spaces provided below, label each figure with the phase of mitosis that it represents.



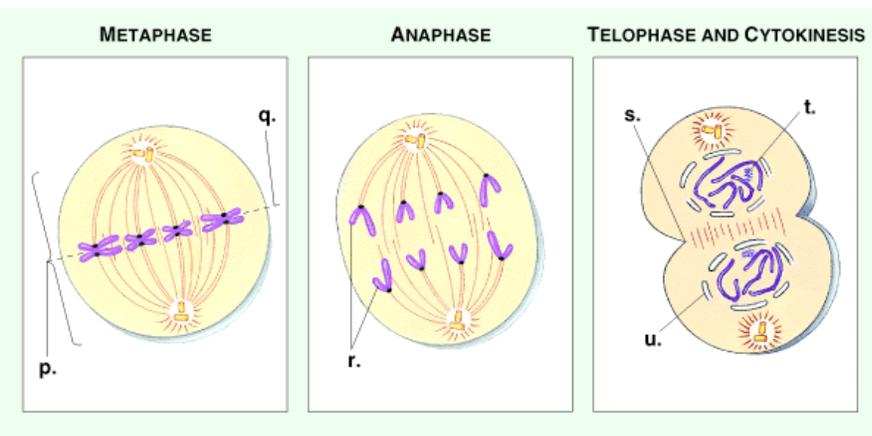
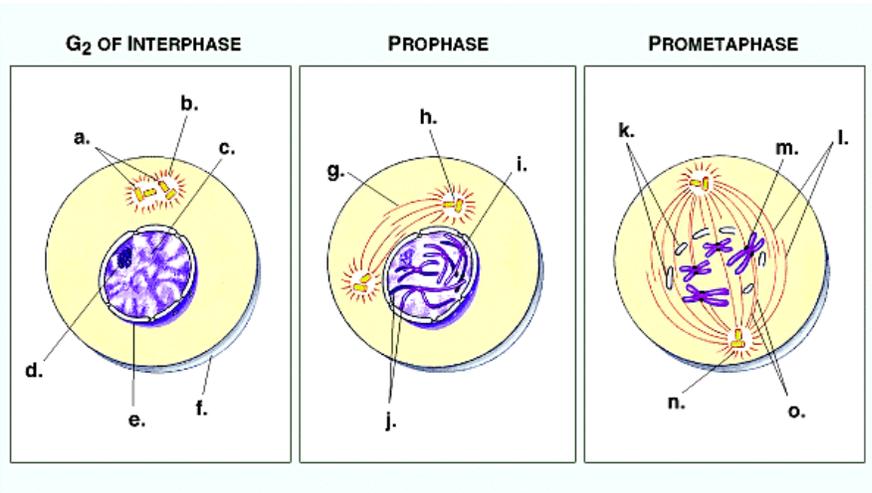
33. In which type of cell does mitosis occur --- prokaryote or eukaryote? Explain why. **Eukaryotes, they have a nucleus**
34. What happens to the nucleus & nucleolus during prophase? **They disappear**
35. Why do chromosomes become visible during prophase? **They condense**
36. What are kinetochores? **Fibers that attach to and move chromosomes around.**
37. Where do kinetochore fibers attach to a chromosome? **At the centromere of the chromosome**
38. From what does the spindle form in plants? **microtubules** in animals? **centrioles**
39. What are asters & where are they in a cell? **Fibers that anchor the centrioles in place.**

40. Sketch & label the parts of a spindle.



41. During metaphase, where do chromosomes line up & what MOVES them there? **They line up at the metaphase plate at the equator of the cell, kinetichore fibers move them there.**
42. What pulls sister chromatids apart during anaphase? **Kinetichore fibers**
43. What disassembles in telophase? **Spindle fibers**

44. What organelle reappears inside the nucleus? **nucleolus**
45. What divides during cytokinesis? **The cytoplasm**
46. Explain how cytokinesis occurs in plants. **A cell plate forms separating the cell.**
47. Explain how cytokinesis occurs in animals. **A cleavage furrow forms splitting the cell.**
48. How does the chromosome number of the parent cell compare to that of the 2 daughter cells? How do the 3 cells compare in size? **The chromosome number in the daughter cell is the same. The daughter cells are equal in size, but smaller than their parent cell.**
49. What is the first thing the daughter cells must do following cytokinesis? **Grow (G1)**
50. What is the longest phase of the cell cycle? **G1** the shortest phase? **C**
51. Which phase has 3 stages & name them? **Interphase - G1,S,G2**
52. Which phase has 4 stages & name them? **Mitosis- Prophase, Metaphase, Anaphase and Telophase**
53. Before a cell can divide, it must first _____ its DNA. **Copy or replicate**
54. The two main stages of cell division are called _____ and _____. **Mitosis, Cytokinesis**



55. Label these mitosis diagrams.
- a. centrioles
 - b. aster fibers
 - c. chromatin
 - d. nucleolus
 - e. Nuclear membrane
 - f. cell membrane
 - g. spindle fibers (polar)
 - h. centrioles
 - i. centromere
 - j. sister chromatids
 - k. nuclear membrane
 - l. Polar fibers
 - m. chromosome
 - n. asters
 - o. kinetichore fibers
 - p. mitotic spindle
 - q. metaphase plate (equator)
 - r. sister chromatids
 - s. cleavage furrow
 - t. nucleolus
 - u. nuclear membrane